

Serial No. 09/978,516

deficiency in Golsch. As an example, Boothby and Kemper do not suggest an annular gap and the driving element or an annular gap in communication with ports in the cylinder. It is respectfully submitted that the rejection of claim 1 and the claims which depend therefrom has been overcome. Favorable reconsideration is respectfully requested.

Claims depending from claim 1 have been amended or added to further define the present invention to distinguish over the prior art. As an example, claim 16 has been added directed to the specifics of the bumper which are not taught by the prior art. Similarly, claims 2 and 7 have been amended directed to the specifics of the bumper which are not taught by the prior art. Favorable reconsideration is respectfully requested.

The Examiner has cited the United States Patents listed in NOTICE OF REFERENCES CITED as A-D, F-H, K and L. By the lack of application of these references and others like them within the classes or subclasses searched, the Examiner apparently recognizes the clear patentability of the present invention over any of these references.

Therefore, since the claims of the present application have been shown to include limitations directed to the features of applicant's nail driving tool which are neither shown, described, taught, nor alluded to in any of the references cited by the Examiner, whether those references are taken singly or in any combination, the Examiner is requested to allow claims 1-5, 7, 9-11 and 13-16, as amended, of the present application and to pass this application to issue.

Respectfully submitted,

Hwai-Tay Lin

Dated: February 5, 2003

By: 

Alan D. Kamrath (Reg. No. 28,227)
RIDER BENNETT EGAN & ARUNDEL
333 South Seventh Street, Suite 2000
Minneapolis, MN 55402
Tel: (612) 340-8925
Fax: (612) 340-7900

Serial No. 09/978,516

VERSION MARKED TO SHOW CHANGES**IN THE SPECIFICATION**

Page 1, line 7 to page 2, line 6 has been amended as follows:

U.S. Patent No. 4,932,480 to Golsch issued on June 12, 1990 discloses a pneumatically powered nail-driving tool 10 comprising a cylinder 20, a piston 26 reciprocatingly received in the cylinder 20, and a main valve 60 for driving the piston 26. A driving element 32 is attached to the piston 26 for driving a nail. Movement of the piston 26 is arrested by an air-cooled bumper 70 to thereby provide a cushioning effect. As illustrated in Figs. 2 through 5 of this patent, the bumper 70 comprises an upper end 100, a lower end 102, an inner peripheral surface 104, and an outer peripheral surface 106. The bumper 70 has an annular flange 108 extending outwardly at its lower end 102. The annular flange 108 fits into the annular recess 82 in the cylindrical wall 24, when the bumper 70 is fitted within the cylinder 20, so as to secure the bumper 70 against the end wall 24. The bumper 70 has eight slots 110 extending radially from the inner peripheral surface 104 and eight slots 112 extending radially from the outer peripheral surface 106. Arrangement of the slots 110 and 112 in the bumper 70 provides a good bumping effect. However, since the bumper 70 is made of a single resilient or elastomeric material, the face of the bumper 70 that is subject to impact of the piston 26 would become soft and thus ~~[loose]~~ lose its impact-resisting effect. In addition, breakage tends to occur between the slots 112 and the slots 110. Further, when the upper end 100 of the bumper 70 is subject to the impact from the piston 26, the bumper 70 is already in intimate contact with the cylinder 20 and thus has a low cushioning effect, as there is no room allowing further deformation of the bumper 70. Further, during assembly of the bumper 70, the slots 112 of the bumper 70 must be aligned with the ports 80 in the cylinder 20 in order to assure exhaustion of the air in the space 30 below the piston 26 via the ports 80. Difficulty and inconvenience in the assembly procedure are thus caused.

Page 3, lines 8-17 has been amended as follows:

The cylinder 20 comprises a chamber 21 defined by an inner peripheral wall 211 and an end wall 212. A piston-driving means 22 is mounted in the chamber 21 at a position opposite to the end wall 212. An example of the piston-driving means 22 comprises pressurized air or inflammable gas. An annular connecting wall 213 is provided to interconnect the end wall 212 with the inner peripheral wall 211. ~~[A general plane of the]~~ The annular connecting wall 213 has [is located at] a cross sectional size larger than [level different from] that of the inner

Serial No. 09/978,516

peripheral wall 211. A through-hole 23 is defined in a central portion of the end wall 212. Further, plural ports 214 are defined in the inner peripheral wall 211 and communicated with the compartment 12.

Page 3, line 22 through page 4, line 8 has been amended as follows:

A bumper 30 is securely mounted in an end of the chamber 21 of the cylinder 20. As illustrated in Figs. 2A and 2B, the bumper 30 comprises a first bumper section 31 and a second bumper section 32 made of a material that is less rigid than that of the first bumper section 31. The second bumper section 32 includes an enlarged end section 321 that abuts against the end wall [211] 212 and that is securely received in a space defined by the annular connecting wall 213 of the cylinder 20. Further, the remaining portion of the bumper 30 is not in contact with the inner peripheral wall 211 of the cylinder 20, thereby providing a gap therebetween. The bumper 30 has a central through-hole 33 extending through the first bumper section 31 and the second bumper section 32 and aligning with the through-hole 23 in the end wall 212. As illustrated in Fig. 1, the driving element 25 extends through the through-hole 23 in the end wall 212 of the cylinder 20 and the through-hole 33 in the bumper 30.

IN THE CLAIMS

Please amend claim 1 as follows:

1. A nail-driving tool comprising:

[a head;]

a cylinder [mounted in the head and] comprising a chamber defined by an inner peripheral wall and an end wall, the end wall including a through-hole, the inner peripheral wall including plural ports communicated with outside;

a piston reciprocatingly received in the chamber of the cylinder;

a driving element securely attached to the piston to move therewith, the driving element extending through the through-hole of the end wall;

a bumper [comprising a first bumper section and a second bumper section made of a material having a rigidity different from that of] located between the [first bumper section,] piston and the end wall, the driving element extending through the bumper; and

an annular gap between the inner peripheral wall of the cylinder and a portion of the bumper not in contact with the inner peripheral wall of the cylinder and around the driving element, with the annular gap being in communication with the plural ports.

Serial No. 09/978,516

[wherein when in a driving stroke of the piston toward the bumper,] the annular gap allowing exit of the air in the chamber [exits the cylinder] via the plural ports of the cylinder and allowing entrance of ambient air into the chamber of the cylinder via the plural ports of the cylinder.

Please amend claim 2 as follows:

2. The nail-driving tool as claimed in claim 1, wherein the [first bumper section is more rigid than the second bumper section, the second] bumper [section comprising] includes an enlarged end section that abuts against the end wall, with the enlarged end section being of a larger cross sectional size than the portion of the bumper not in contact with the inner peripheral wall of the cylinder, with the nail-driving tool further comprising an annular connecting wall being defined between the end wall and the inner peripheral wall, the enlarged end section of the [second] bumper [section] being securely received in a space defined by the annular connecting wall.

Please amend claim 3 as follows:

3. The nail-driving tool as claimed in claim 2, wherein the annular connecting wall has a [general plane located at a level different from] cross-sectional size larger than that of the inner peripheral wall of the cylinder, thereby defining [a] the annular gap between the inner peripheral wall of the cylinder and the portion of the bumper not in contact with the inner peripheral wall of the cylinder.

Please amend claim 5 as follows:

5. The nail-driving tool as claimed in claim 1, further comprising:
a head, with the cylinder mounted in the head, wherein the head comprises plural ports in an end thereof to allow communication between the chamber of the cylinder and outside.

Please amend claim 7 as follows:

7. The nail-driving tool as claimed in claim [6] 3, with the bumper comprising a first bumper section and a second bumper section, wherein the first bumper section is more rigid than the second bumper section, the second bumper section [comprising an] including the enlarged end section that abuts against the end wall, [an annular connecting wall being defined between the end wall and the inner peripheral wall,] the enlarged end section of the second bumper section [being securely received in] having a cross sectional size larger than that of [space defined by] the annular [connecting wall] gap.

Serial No. 09/978,516

Please amend claim 9 as follows:

9. The nail-driving tool as claimed in claim [6] 3, further comprising means for driving the piston, said piston-driving means being one of pressurized air and inflammable gas.

Please amend claim 10 as follows:

10. The nail-driving tool as claimed in claim [6] 3, further comprising:
a head, with the cylinder mounted in the head, wherein the head comprises plural ports in an end thereof to allow communication between the chamber of the cylinder and outside.

Please amend claim 11 as follows:

11. The nail-driving tool as claimed in claim 7, wherein the annular gap is defined between the second bumper section and the inner peripheral wall of the cylinder.

Please amend claim 14 as follows:

14. The nail-driving tool as claimed in claim 11, further comprising:
a head, with the cylinder mounted in the head, wherein the head comprises plural ports in an end thereof to allow communication between the chamber of the cylinder and outside.

IN THE ABSTRACT

Page 9, lines 2-7 have been amended as follows:

A nail-driving tool [comprises] includes a cylinder defining a chamber for reciprocatingly receiving a piston. A bumper is received in the chamber and [comprises] includes a first bumper section and a second bumper section made of a material having a rigidity different from that of the first bumper section. When in a driving stroke of the piston toward the bumper, air in the chamber exits the cylinder via ports of the cylinder.